1. The radius of the earth is about 6400 km . What would be the earth's gravitational attraction on 75 kg astronaut in an orbit 6400 km above the earth's surface.
2. The mass of Mars is about $6.6 \times 10^{23} \mathrm{~kg}$, and the acceleration due to gravity is $3.7 \mathrm{~m} / \mathrm{s}^{2}$. What is the radius of Mars?
3. The earth's radius is 6400 km . A 25 kg mass is taken 201 km above the earth's surface.
a.
b.
c.
4. The radius of a planet is 3400 km . If an object weighs 550 N at the surface of the planet, what is its weight

12 km above the surface?
b. $\quad 210 \mathrm{~km}$ above the surface?
5. A sphere of mass 85 kg is 12 m from a second sphere of mass 65 kg .
a. What is the gravitational force of attraction between them?
b. What is the acceleration of the first sphere toward the second?
6. An amusement park ride consists of a turntable of 2.0 m radius turning at $0.70 \mathrm{rev} / \mathrm{s}$ about a vertical axis. If a 70.0 kg child sits at the outer edge of the turntable, what force is necessary to keep the child from sliding off?
7. A 150 kg object is launched into orbit at a height of $12,800 \mathrm{~km}$ above the earth's surface.
a.

What is the weight of the satellite on the surface of the earth?
b. What is the weight of the satellite in orbit?
c. What is the speed of the satellite in orbit?
8. A satellite orbits a planet at $4.0 \times 10^{3} \mathrm{~m} / \mathrm{s}$, and the acceleration of gravity on the satellite is $0.58 \mathrm{~m} / \mathrm{s}^{2}$. What is the diameter of the orbit?

